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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,946	03/06/2002	Yingzhong Lu		7602

30677 7590 11/15/2002

LU YINGZHONG
104 HARLAND COURT
OAK RIDGE, TN 37830

EXAMINER

DOERRLER, WILLIAM CHARLES

ART UNIT	PAPER NUMBER
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3744

DATE MAILED: 11/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/683,946

Applicant(s)

LU, YINGZHONG

Examiner

William C Doerrler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1 the following terms lack clear antecedent basis: "the raw NG inlet pipeline" and "the lean NG outlet in line 4, "the medium inlet and transfer pipelines" in line 6, "the absorbent inlet and recycle pipelines" in line 8, "the rich oil transfer and outlet pipelines" in line 9, "The absorbent outlet pipeline" and "the product outlet pipeline " in line 10, "the effluent transfer pipeline" and the inhibitor recycle pipeline" in line 11 and "the wastewater discharge pipeline" in line 12, "the refrigerant inlet and outlet pipelines in line 13. In line 14 of claim 1, it is unclear if "a pipeline for delivering the lean NG" is the same as "the lean NG outlet pipeline" of line 4. Claim 1 is unclear because there is no clearly claimed connection between the mentioned components. For example, there is a refrigeration unit claimed, but it is never stated what is being refrigerated. Also in claim 1 it is confusing to have an inhibitor regenerator when no inhibitor is being claimed anywhere else in the claim. Claim 2 seems to contradict claim 1 from which it depends. Dependent claims by definition contain all the claimed structure from the claim from which they depend. It appears that claim 2 is attempting to remove structure which has been claimed in claim 1. In claims 3 and 4, "in directly" should be changed to --in direct-

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- In claim 3, it is unclear whether "a heat transport medium" is the same heat transport medium claimed in claim 1. The same is true of "an absorbent" in claim 4.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mehra '535 in view of Doerler et al.

Mehra '535 discloses applicant's basic inventive concept, a gas processing system with an absorption step (in 11) which removes water and heavy hydrocarbons from the feedstream and a fractionator (demethanizer 91), as well as a regenerator for the solvent (51), substantially as claimed with the exception of using 2 separate absorption stages (one for water removal and the other for heavy hydrocarbon removal) and outputting the removed light hydrocarbons. Doerler et al show this feature to be old in the gas separation art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Doerler et al to modify the separation system of Mehra '535 by using the fractionation column output gas as product to produce income which might otherwise be wasted and to separate the separation stages to improve control over each of the stages.

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Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mehra '535 in view of Doerler et al as applied to claims 1-6 above, and further in view of Foerster.

Mehra, as modified, discloses applicant's basic inventive concept, a separation system using direct contact between fluids to separate water and heavy hydrocarbons from a feedstream, substantially as claimed with the exception of using the expansion of the gas stream to produce the necessary refrigeration. Foerster shows this feature to be old in the separation art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Foerster to modify the separation system of Mehra by using an expander to produce refrigeration necessary for the system to improve overall efficiency of the system. In regard to claims 9-11, Official Notice is taken that expansion valves, expander-compressors and free piston expanders are all well known in the gas cooling art and as such would have been an obvious modification for an ordinary practitioner in the art to provide the most efficient cooling depending on the feed conditions and the amount of capital required to build and operate the system.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mehra '381, Rojey et al, Sutherland et al, Collin et al and Holmes et al show separation systems using direct contact with a solvent and the feedstream.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C Doerrler whose telephone number is (703) 308-0696. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on (703) 308-2597. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.



William C Doerrler
Primary Examiner
Art Unit 3744

WCD
November 12, 2002